



Nuclear Science Division

To: The Honorable Michael Rounds, Governor of the State of South Dakota
From: Dr. Kevin Lesko, Senior Physicist, Lawrence Berkeley National Laboratory
Subject: Homestake Meeting at Berkeley

20 August 2004

Dear Mike,

Last weekend, Saturday and Sunday August 14 - 15, we had the first meeting of the new Homestake Scientific Collaboration, hosted by Berkeley Lab. The first focus of this meeting was to start preparing our proposal in response to the anticipated NSF Solicitation 2. You may already have received reports from Jamie, whose presence we much appreciated, and from Dick Gowen, but no doubt you'll want to get the news from the scientists' perspective. Attached is a list of names, scientific interest, and affiliations of the ~40 scientists and engineers who attended. We have indications of another dozen or so who are strongly interested in Homestake, but were unable to attend this meeting. The collaboration is open and is actively seeking additional members. I was particularly gratified to note the wide diversity of research interests that will be pursued at Homestake DUSEL.

Homestake was well represented by Bill Noordermeer, Syd DeVries, the Campbells, Bill Roggenthen as well as by Dick and Jamie. Bill, Dick, and Syd, with some help from Jamie, presented nice, detailed summaries of the status of the mine, surface facilities and plans for their rehabilitation, restoration and conversion to research activities. Tom's presentation on the Core Samples was of interest to engineers and earth scientists. It's fair to say that we all were impressed with their ability to carry out the work. Dick and Jamie also discussed the state's strong support for the conversion of the facilities to a national laboratory. All were impressed with South Dakota's commitment to the project and determination to have it succeed.

Work has begun within the scientific collaboration to prepare the proposal to match the various experimental requirements with the mine's resources as will be requested by NSF in its solicitation (Attachment B). We started plans for education and outreach and for the management organization and operation of the facility. Clearly we have wide representation in almost all disciplines. The Homestake Scientific Collaboration has been reinvigorated.

In our general discussions, it became clear that two considerations are of major importance to the scientific community. These considerations directly point to the issues raised by the NSF in their restarting of the DUSEL process: timely access to the mine and the flooding of the mine. A substantial block of time was devoted to discussing how best to access the mine as early as feasible and to what extent to address the flooding. The two key issues for Homestake in the near future are:

- Early access to the mine to prepare it for scientific research at the 4850 ft level and above. This will also confirm the integrity of the infrastructure, and
- An early start to stop the flooding and begin dewatering the mine to allow later activity at the lowest, 7400 ft or deeper levels in the mine.

The favored mode, as expressed by the collaboration, is in effect a phased approach, beginning as soon as possible, to develop the mine as a research facility and to at least control the flooding. The competitive advantage in this early phased approach seems obvious in presenting NSF with a picture of a lab already in limited operation and with work underway to make the facility available and in the not too distant future to host research at maximum depth. That means of course starting the rehabilitation and restoration process with South Dakota funds, well before NSF makes funds available. In the course of the meeting we developed six options to be formally evaluated. These options are included in Attachment C. Syd indicated he would make the cost and schedule estimates in final form available to you and the Homestake collaboration in a few weeks. Such a mode of operation will help excite the interest of and expand the participation of others in the Homestake collaboration. After reviewing the estimates and the scientific options for early occupancy, I hope you'll agree and make early occupancy happen.

Sincerely,

Attachments:

- A: Attendees to the Berkeley Meeting
- B: Working Groups and Assignments
- C: Six options for early occupancy of Homestake

Attachment A: Attendees to the Berkeley Meeting

1 Lesko	Kevin	KTLesko@lbl.gov	LBLN + UCB	Double Beta Decay, Solar Neutrinos
2 Wang	Joe	JSWang <JSWang@lbl.gov>	LBLN	Geo
3 Chinowsky	Willi	WChinowsky@lbl.gov	LBLN + UCB	Projects, Management, Outreach + Education
4 Alonso	Jose	JRAlonso@lbl.gov	LBLN	Nuclear Astrophysics
5 Berley	David	berley@umdgrb.umd.edu	UMD	Projects, Management
6 Bishai	Mary	mbishai@bnl.gov	BNL	Long Baseline Experiments
7 Campbell	Melissa	tomnmel@rap.midco.net	SDSMT	Geo
8 Campbell	Tom	tomnmel@rap.midco.net	SDSMT	Geo
9 Chan	Yuen-dat	YDChan@lbl.gov	LBLN	Double Beta Decay
10 Chow	Ken	KPChow@lbl.gov	LBLN	Engineering
11 Conrad	Mark	MSConrad@lbl.gov	LBLN	Geochemistry
12 Currat	Charles	CACurrat@lbl.gov	LBLN	Double Beta Decay
13 DeVries	Syd	DEVRIES@dynatec.ca	Dynatec	Engineering
14 Diwan	Millind	diwan@bnl.gov	BNL	Long Baseline Experiments
15 Frey	Fred	fafrey@mit.edu	MIT	Low Background Counting Facility
16 Fujikawa	Brian	BFujikawa@lbl.gov	MIT	physics
17 Goodman	Jordan	goodman@umdgrb.umd.edu	UMD	Projects, Management, Outreach + Education
18 Gowen	Dick	Gowen@state.sd.us	SDSTA	Management
19 Hartouni	Ed	hartouni1@llnl.gov	LLNL	Homeland Security
20 Hazen	Terry	tchazen@lbl.gov	LBLN	Ecology
21 Henning	Reyco	RHenning@lbl.gov	LBLN	Engineering Projects
22 Johnson	Lane	LRJohnson@lbl.gov	LBLN	Geophysics
23 Kirk	Tom	tkirk@bnl.gov	BNL	Projects, Long Baseline Experiments
24 Lafever	Robin	RELafever@lbl.gov	LBLN	Engineering
25 Lande	Ken	klande@sas.upenn.edu	Penn	P-decay, Long Baseline Experiments
26 Lanou	Bob	lanou@holley.physics.brown.edu	Brown U.	Solar Neutrino
27 Lee	Kevin	David Cline <dcline@physics.ucla.edu>	UCLA	Long Baseline Experiments
28 Mann	Al	mann@physics.upenn.edu	Penn	p-decay, Long Baseline Experiments
29 Marshak	Marvin	marshak@umn.edu	U. M.	P-decay, Long Baseline Experiments
30 Noordermeer	Bill	Bill.Noordermeer@state.sd.us	SDSTA	Engineering
31 Pillalamarri	Ila	pilla@MIT.EDU	MIT	Low Background Counting Facility
32 Roggenthen	Bill	William.Roggenthen@sdsmt.edu	SDSMT	Geosciences
33 Rounds	Jamie	Jamison.Rounds@state.sd.us	SD	Management
34 Salve	Rohit	R_Salve@lbl.gov	SD	Hydrology
35 Schmidt	Gail	GAIL.L.SCHMIDT@saic.com	SAIC	Projects
36 Scholberg	Kate	schol@MIT.EDU , Duke University/M	Duke	Supernovae
37 Symons	James	TJSymons@lbl.gov	LBLN	Management
38 Trilling	George	GHTrilling@lbl.gov	LBLN + UCB	Physics

Attachment B: Preliminary Working Groups and Assignments

Disciplines and Formation of Science Working Groups

	Form working groups	Identify additional people/institutions
Earth Sciences		
Ecology, Environment	Hazen	
Geochemistry	Conrad, Frey	
Geophysics	Johnson, Majer(?)	
Hydrology	Salve, McPherson(?)	
BioPhysics	Phelps (?), Hazen	
Rock Mechanics	Glaser(?), Myer(?)	
Engineering	Einstein(?)	
Geology	Roggenthen, Wang, Wang, Pariseau, Campbell ² ,	
Atmospheric, Aerosols	Helsdon	
Physics		
Nuclear Astrophysics	Weischer(?) Alonso	
Proton Decay	Marshak, Lande, Cline(?), Goodman	
Dark Matter	Lanou, Gaitskill(?), Baudis(?)	
Neutrinos	Murayama (TBC)	
Double Beta Decay	Elliott, Lesko, Henning, Chan, Fujikawa, Gratta(?)	
Long Baseline Experiment(s)	Diwan, Kirk, Bishai, FNAL(?)	
Solar Neutrinos	Lanou, Lesko, Poon(?), Klein(?)	
Atmospheric Neutrinos	Scholberg(?)	
Supernovae Searches	Scholberg	
Other Applications		
NNSA, Homeland Security	Hartouni, Rutowski, Miley(?)	
Low Background Counting for basic and applied science	Pillalamarri, Smith, Frey,	
Industrial	Jagam, Schutt(?)	
Manufacturing and Storage of Materials	Pillalamarri, Lande	
	Chan, Henning (for DBD)	
Outreach		
	Chinowsky, Goodman, Marvin(?), S.D. (tbd),	
	Pfeiffer, Campbell ² , Schmidt, Pillalamarri	
Management	SDSTA-Gowen, Governor's office-Rounds, Berley,	
	Chinowsky, Chow, Symons or Marx(?), Kirk or	
	Samios(?), Bernthal(?)	

Attachment C: Six options for early occupancy of Homestake to be formally evaluated and costs and schedule estimated.

1. Re-Entry; Safe Access for Mining Personnel; Basic shaft safety operation; rehab 4850 and access to 3950; safety/ventilation/limited access from bulkheads surface to 4850; Ventilation, water treatment, Continuing minimum pumping operation, Geosciences access in coordination with mining personnel only,
 - a. Hold water at 4850 level
 - b. Hold water at current level
 - c. Remove accumulated water
2. Re-Entry; Safe access for Mining Personnel and Research; shaft upgrade; rehab 4850 and access to 3950; safety/ventilation bulkheads surface to 4850; Ventilation, water treatment; Continuing pumping operation, Safe Access for Physics and Geosciences
 - a. Hold water at 4850 level, 4850 research and above
 - b. Hold water at current level, 4850 research and above
 - c. Remove accumulated water, deep research (this option was presented by Syd and Bill)